FIG. 2

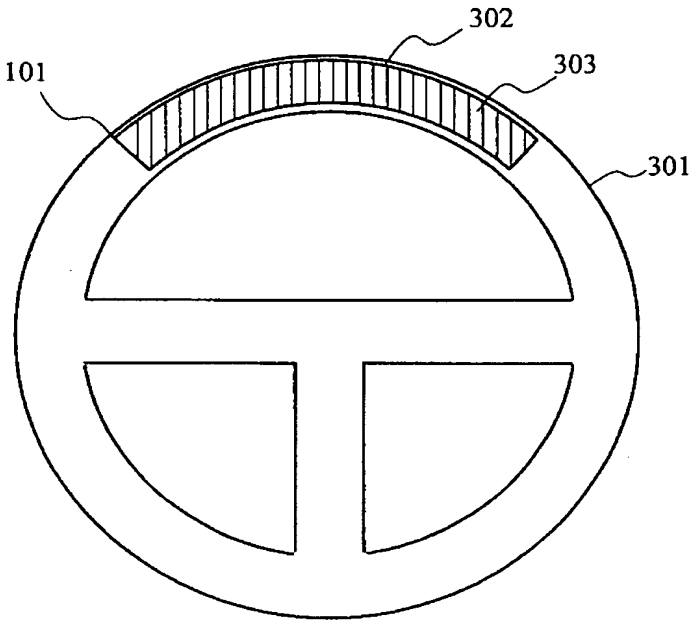

302
303
101
301

FIG. 3

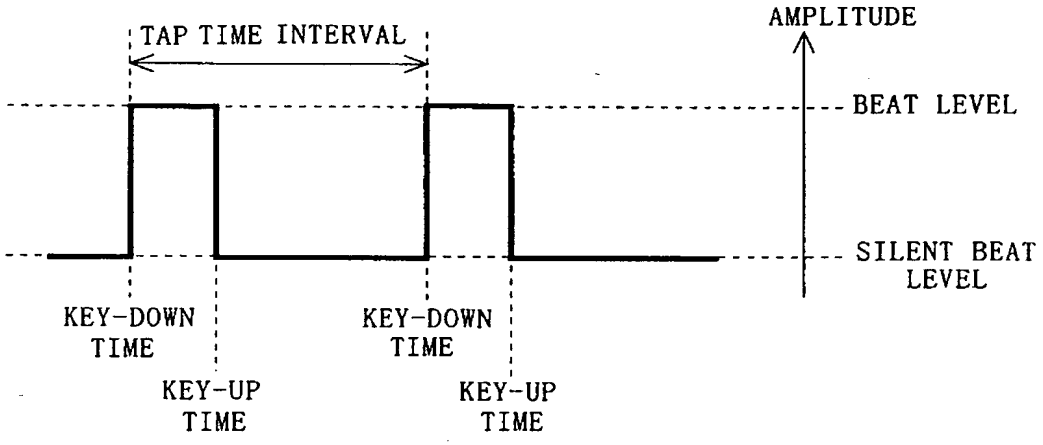

TAP TIME INTERVAL
AMPLITUDE
BEAT LEVEL
SILENT BEAT LEVEL
KEY-DOWN TIME
KEY-UP TIME
KEY-DOWN TIME
KEY-UP TIME

FIG. 7

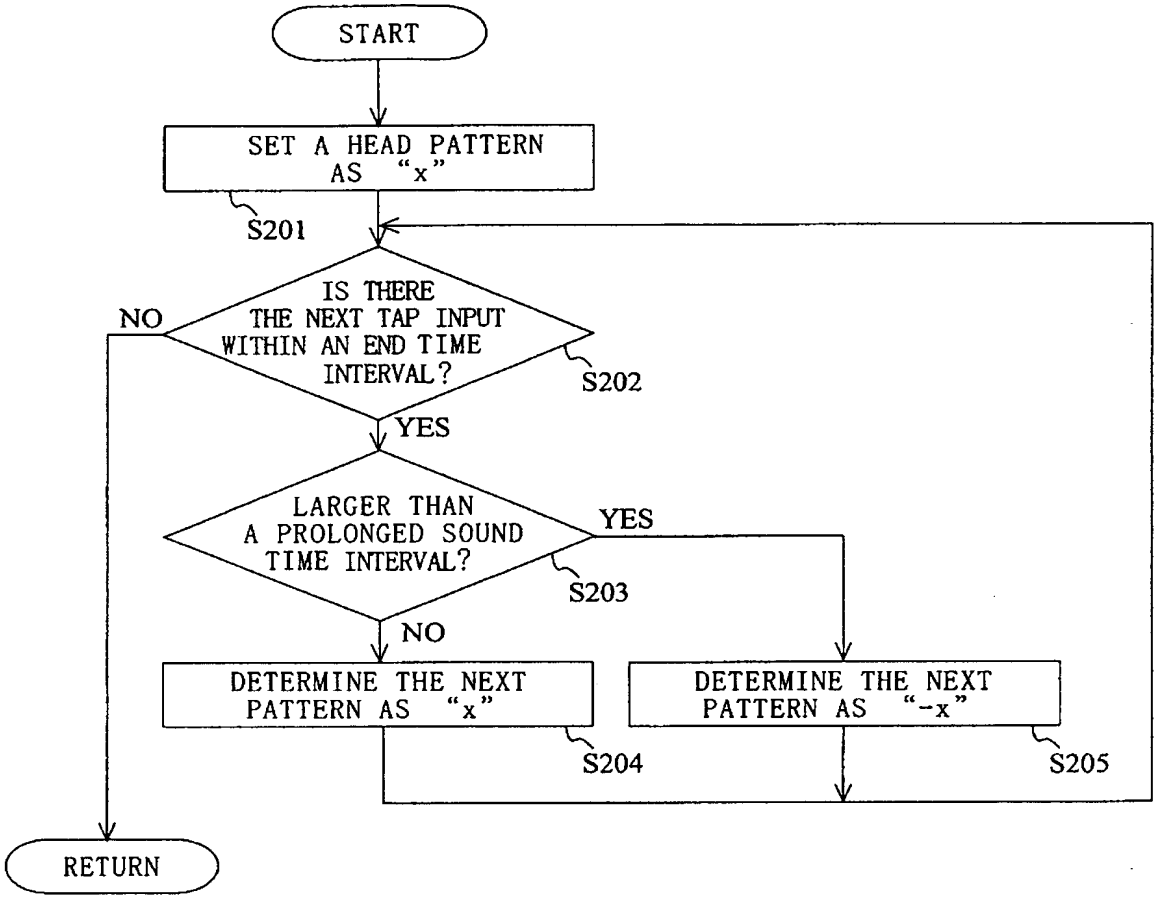

START
SET A HEAD PATTERN AS "x"
S201
IS THERE THE NEXT TAP INPUT WITHIN AN END TIME INTERVAL?
S202
NO
YES
LARGER THAN A PROLONGED SOUND TIME INTERVAL?
S203
YES
NO
DETERMINE THE NEXT PATTERN AS "x"
S204
DETERMINE THE NEXT PATTERN AS "-x"
S205
RETURN

FIG. 8

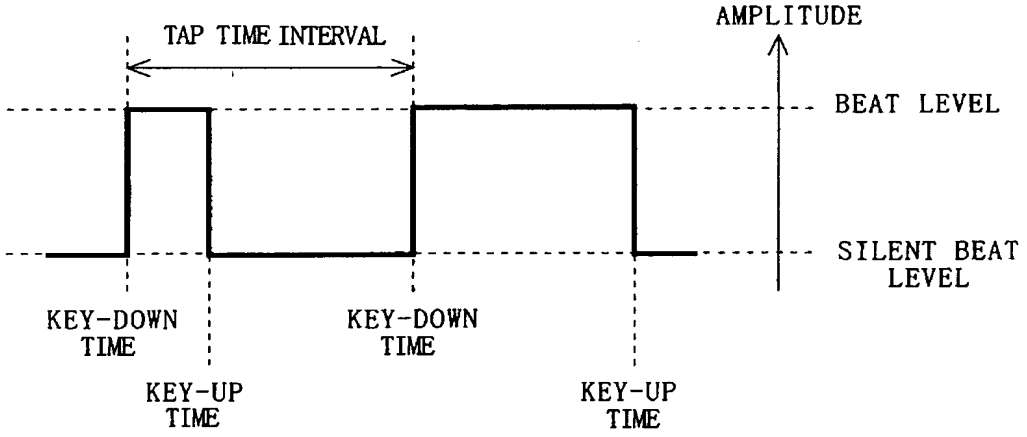

TAP TIME INTERVAL
AMPLITUDE
BEAT LEVEL
SILENT BEAT LEVEL
KEY-DOWN TIME
KEY-UP TIME
KEY-DOWN TIME
KEY-UP TIME

FIG. 9

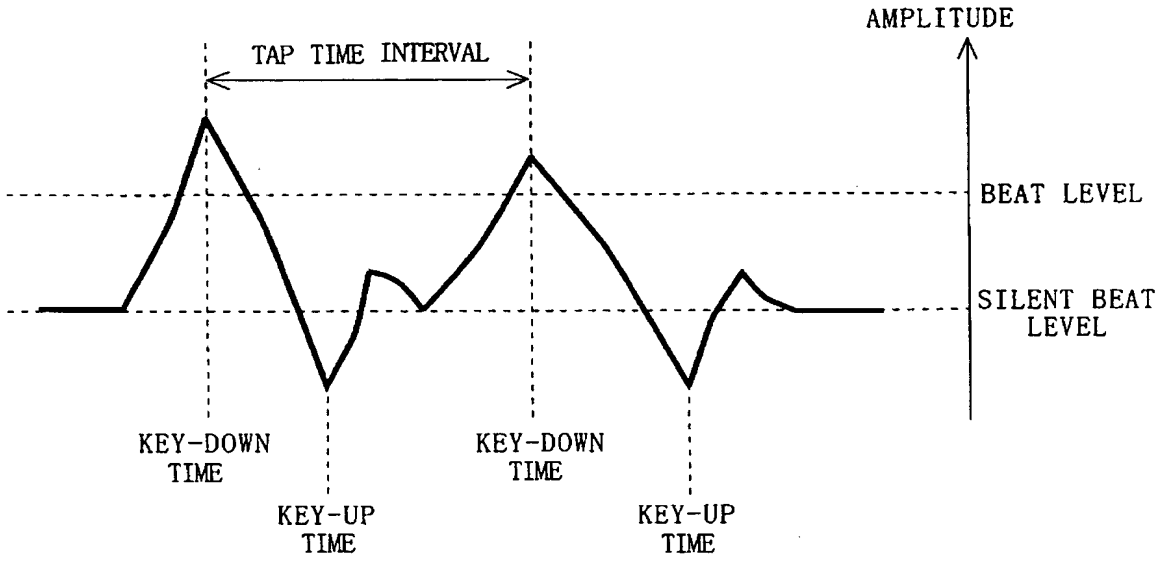

AMPLITUDE
TAP TIME INTERVAL
BEAT LEVEL
SILENT BEAT LEVEL
KEY-DOWN TIME
KEY-UP TIME
KEY-DOWN TIME
KEY-UP TIME

FIG. 10

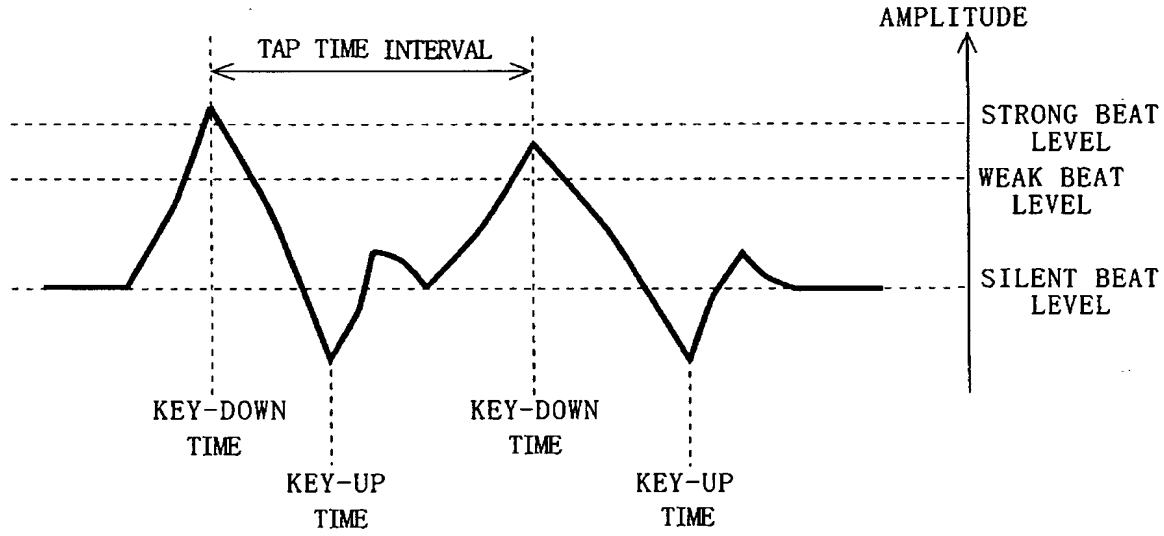

AMPLITUDE
TAP TIME INTERVAL
STRONG BEAT LEVEL
WEAK BEAT LEVEL
SILENT BEAT LEVEL
KEY-DOWN TIME
KEY-UP TIME
KEY-DOWN TIME
KEY-UP TIME

FIG. 13

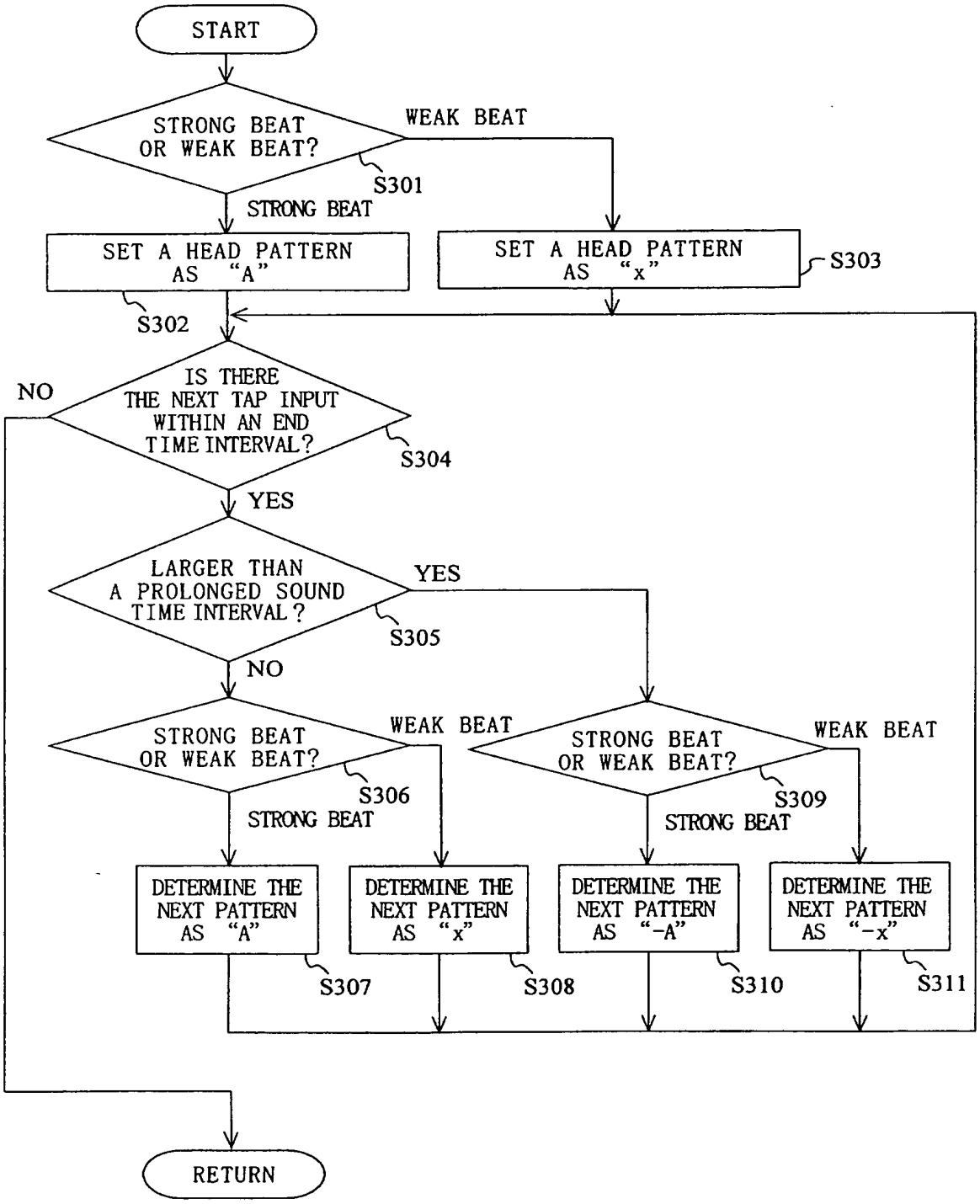

START
STRONG BEAT OR WEAK BEAT?
S301
WEAK BEAT
STRONG BEAT
SET A HEAD PATTERN AS "A"
S302
SET A HEAD PATTERN AS "x"
S303
IS THERE THE NEXT TAP INPUT WITHIN AN END TIME INTERVAL?
S304
NO
YES
LARGER THAN A PROLONGED SOUND TIME INTERVAL?
S305
YES
NO
STRONG BEAT OR WEAK BEAT?
S306
WEAK BEAT
STRONG BEAT
STRONG BEAT OR WEAK BEAT?
S309
WEAK BEAT
STRONG BEAT
DETERMINE THE NEXT PATTERN AS "A"
S307
DETERMINE THE NEXT PATTERN AS "x"
S308
DETERMINE THE NEXT PATTERN AS "-A"
S310
DETERMINE THE NEXT PATTERN AS "-x"
S311
RETURN

FIG. 14

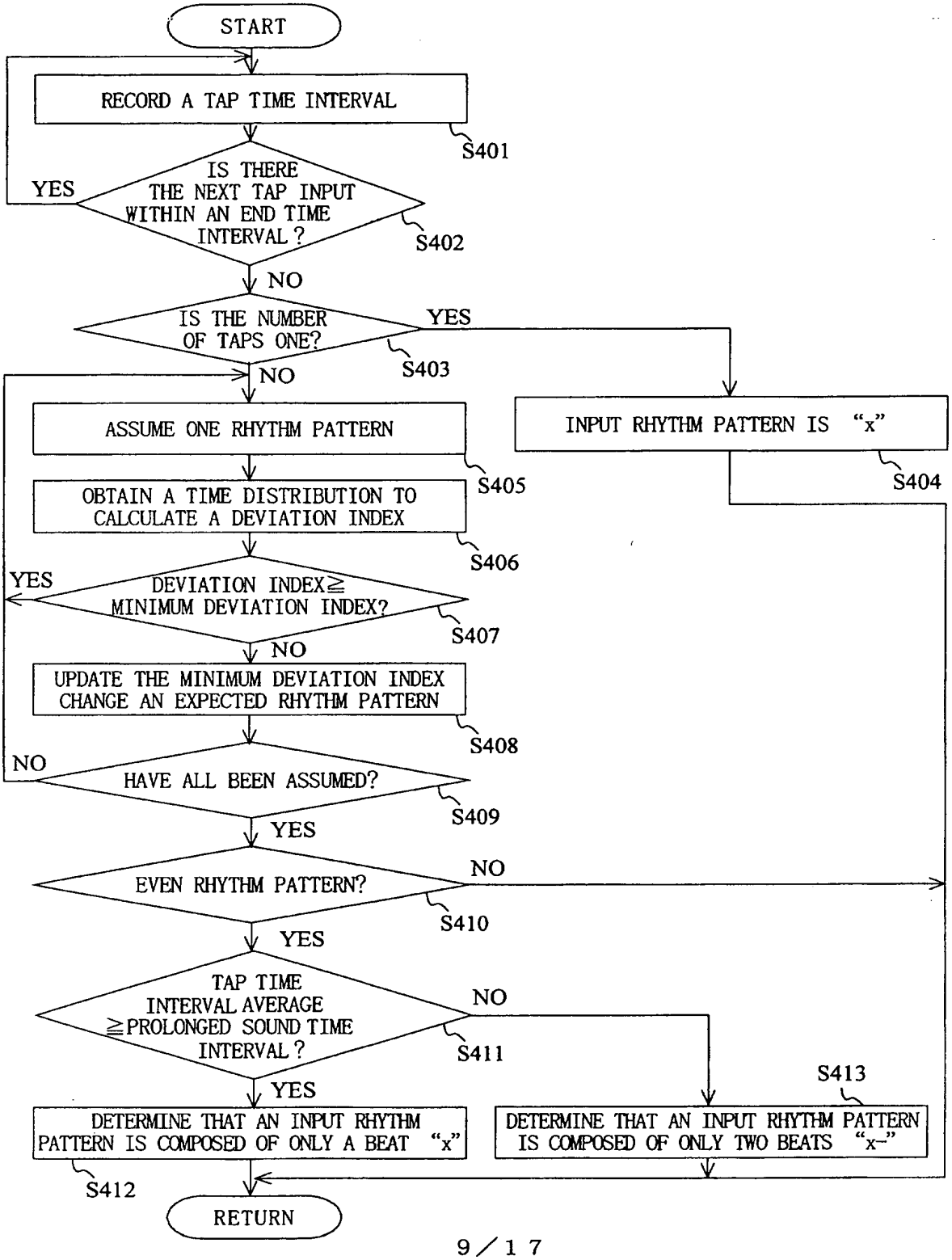

START
RECORD A TAP TIME INTERVAL
S401
IS THERE THE NEXT TAP INPUT WITHIN AN END TIME INTERVAL?
YES
S402
NO
IS THE NUMBER OF TAPS ONE?
YES
S403
NO
ASSUME ONE RHYTHM PATTERN
S405
INPUT RHYTHM PATTERN IS "x"
S404
OBTAIN A TIME DISTRIBUTION TO CALCULATE A DEVIATION INDEX
S406
DEVIATION INDEX≧ MINIMUM DEVIATION INDEX?
YES
S407
NO
UPDATE THE MINIMUM DEVIATION INDEX CHANGE AN EXPECTED RHYTHM PATTERN
S408
HAVE ALL BEEN ASSUMED?
NO
S409
YES
EVEN RHYTHM PATTERN?
NO
S410
YES
TAP TIME INTERVAL AVERAGE ≧PROLONGED SOUND TIME INTERVAL?
NO
S411
YES
S413
DETERMINE THAT AN INPUT RHYTHM PATTERN IS COMPOSED OF ONLY A BEAT "x"
DETERMINE THAT AN INPUT RHYTHM PATTERN IS COMPOSED OF ONLY TWO BEATS "x–"
S412
RETURN

FIG. 15

TAP NUMBER	ACTUAL TAP TIME INTERVAL Ti (ms)
1	764
2	311
3	684
4	341
5	
TOTAL	Σ Ti=2,100
AVERAGE	525

FIG. 16

TAP NUMBER	ASSUMED TAP RHYTHM PATTERN	NUMBER OF BEATS λ i	ASSUMED TAP TIME INTERVAL (ms)	DEVIATION (ms)
1	x −	2	700	+64
2	x	1	350	−39
3	x	1	350	+334
4	x −	2	700	−359
5	x			
TOTAL		Σ λi=6	2, 100	0
AVERAGE		1. 5	τ=350	σ=199

FIG. 17

TAP NUMBER	ASSUMED TAP RHYTHM PATTERN	NUMBER OF BEATS λ i	ASSUMED TAP TIME INTERVAL (ms)	DEVIATION (ms)
1	x −	2	700	+64
2	x	1	350	−39
3	x −	2	700	−16
4	x	1	350	−9
5	x			
TOTAL		Σ λi=6	2, 100	0
AVERAGE		1. 5	τ=350	σ=32

FIG. 18

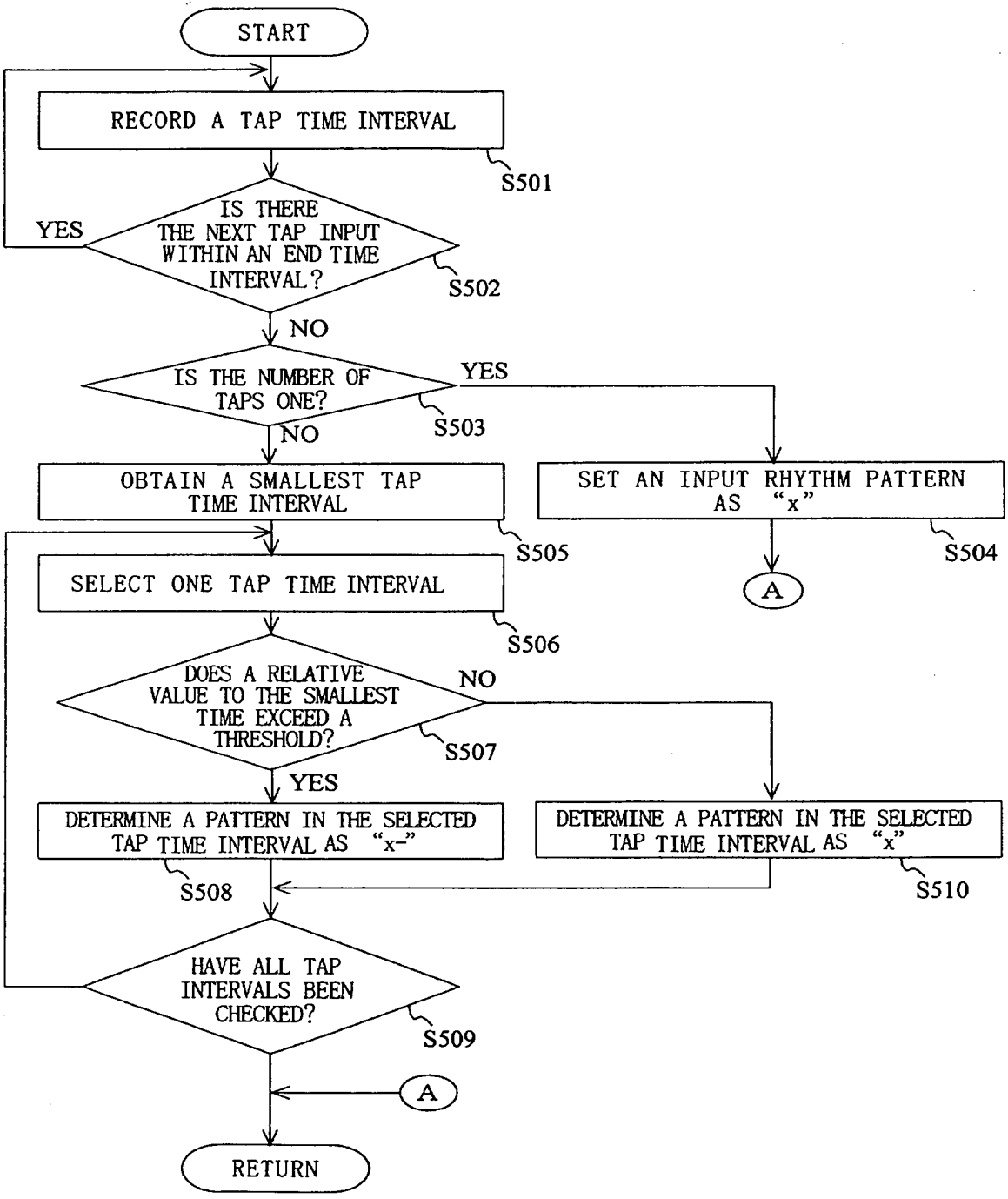

START
RECORD A TAP TIME INTERVAL
S501
IS THERE THE NEXT TAP INPUT WITHIN AN END TIME INTERVAL?
YES
S502
NO
IS THE NUMBER OF TAPS ONE?
YES
S503
NO
OBTAIN A SMALLEST TAP TIME INTERVAL
S505
SET AN INPUT RHYTHM PATTERN AS "x"
S504
A
SELECT ONE TAP TIME INTERVAL
S506
DOES A RELATIVE VALUE TO THE SMALLEST TIME EXCEED A THRESHOLD?
NO
S507
YES
DETERMINE A PATTERN IN THE SELECTED TAP TIME INTERVAL AS "x-"
S508
DETERMINE A PATTERN IN THE SELECTED TAP TIME INTERVAL AS "x"
S510
HAVE ALL TAP INTERVALS BEEN CHECKED?
S509
A
RETURN

FIG. 19

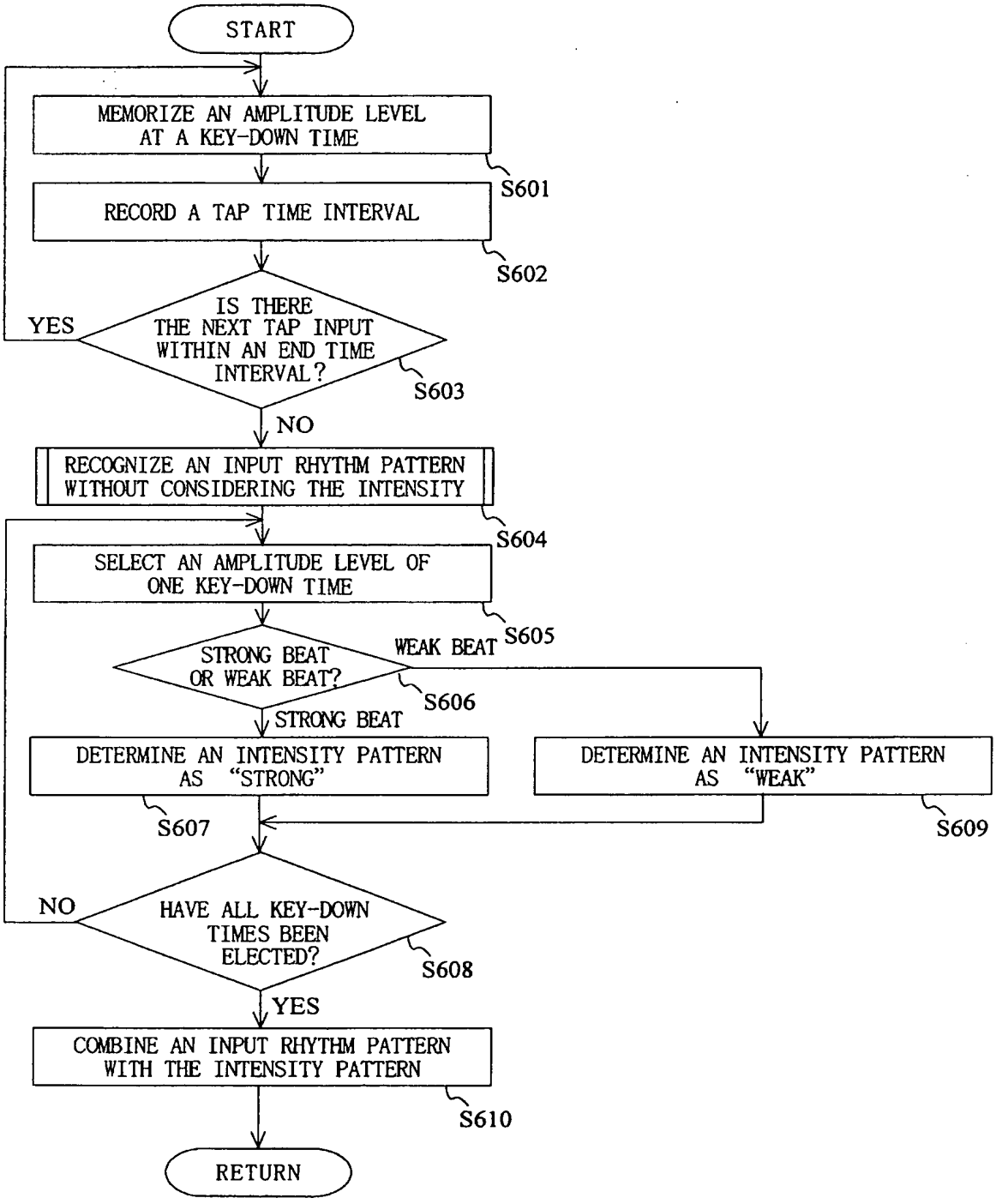
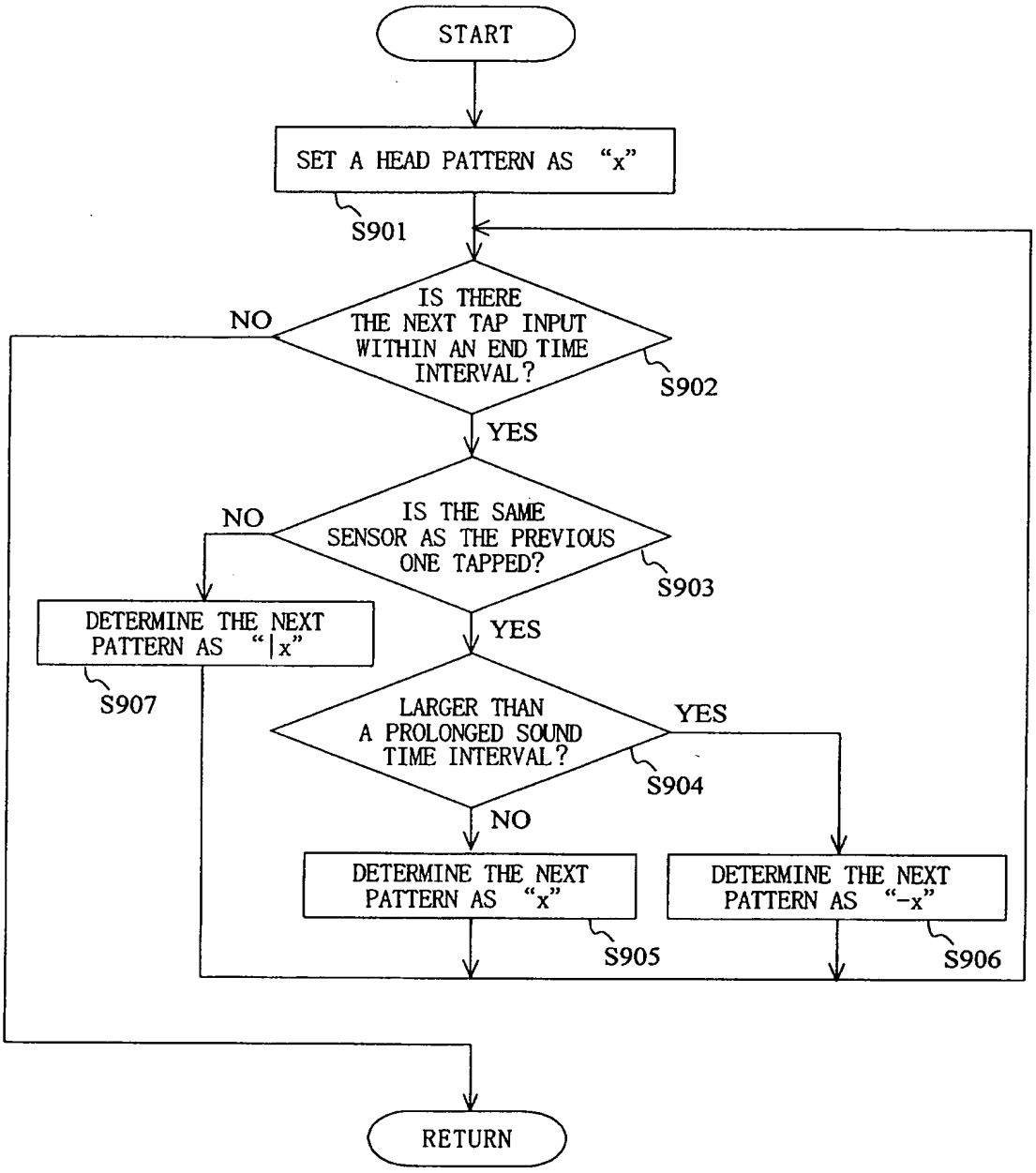

START
MEMORIZE AN AMPLITUDE LEVEL AT A KEY-DOWN TIME
S601
RECORD A TAP TIME INTERVAL
S602
IS THERE THE NEXT TAP INPUT WITHIN AN END TIME INTERVAL?
YES
S603
NO
RECOGNIZE AN INPUT RHYTHM PATTERN WITHOUT CONSIDERING THE INTENSITY
S604
SELECT AN AMPLITUDE LEVEL OF ONE KEY-DOWN TIME
S605
STRONG BEAT OR WEAK BEAT?
WEAK BEAT
S606
STRONG BEAT
DETERMINE AN INTENSITY PATTERN AS "STRONG"
S607
DETERMINE AN INTENSITY PATTERN AS "WEAK"
S609
HAVE ALL KEY-DOWN TIMES BEEN ELECTED?
NO
S608
YES
COMBINE AN INPUT RHYTHM PATTERN WITH THE INTENSITY PATTERN
S610
RETURN

FIG. 25


START
SET A HEAD PATTERN AS "x"
S901
IS THERE THE NEXT TAP INPUT WITHIN AN END TIME INTERVAL?
S902
NO
YES
IS THE SAME SENSOR AS THE PREVIOUS ONE TAPPED?
S903
NO
YES
DETERMINE THE NEXT PATTERN AS "|x"
S907
LARGER THAN A PROLONGED SOUND TIME INTERVAL?
S904
YES
NO
DETERMINE THE NEXT PATTERN AS "x"
S905
DETERMINE THE NEXT PATTERN AS "-x"
S906
RETURN